Hudson Bay Mining and Smelting Co., Limited

annual
report
1978

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Cover: molten anode copper flowing from holding furnace into molds on casting wheel at Flin Flon, Manitoba

A peaceful river in the Yukon, where Hudson Bay Mining has several interests, including Whitehorse Copper Mines Ltd.

Hudson Bay Mining
and Smelting Co., Limited

Hudson Bay Mining, a diversified natural-resources organization consisting of divisions, subsidiaries and associated companies, made three significant investments during 1978 that broadened and strengthened its operating base in North America. In Canada, the Company purchased a 37.5% interest in Tantalum Mining Corporation of Canada Limited and increased its ownership of Whitehorse Copper Mines Ltd. from 41.2% to 100%. In the United States, 100% of the common stock of Inspiration Consolidated Copper Company was acquired through a holding company owned equally by the Company and a related company.

Although the Company is no longer as dependent on metal markets, having diversified into other natural resources, these three investments reflect company policy that metals will continue to have an important role in plans for growth. The Company has operated its own copper-zinc mines and metallurgical plants in northern Manitoba, Canada, since 1930, and since the mid-1960's has made major investments in copper mining in the U.S., in crude oil and natural gas in North America and Indonesia, in fertilizers, feed ingredients and crop-protection chemicals in the U.S., in industrial chemicals and zinc diecastings in Canada, and in exploration services.

Hudson Bay Mining was incorporated as a Canadian company under the Companies Act on December 27, 1927, and continued under the Canada Business Corporations Act. As of January 1, 1979, the authorized capital comprises an unlimited number of common shares, which are traded on the Toronto, New York and Montreal stock exchanges. On January 1, 1979, the Company had 10,626 shareholders and the total number of shares issued was 10,101,739.

Financial

Our earnings of $5,093,000 were not much better than the earnings of $4,413,000 for 1977; however, the composition of our earnings changed. The operations of our petroleum subsidiaries were the largest contributor to earnings, supplanting the contribution from Terra Chemicals International, whose earnings were substantially reduced, primarily the result of lower fertilizer prices and greatly increased operating costs, largely for natural gas. Inspiration Consolidated Copper Company again suffered a loss and although it was less than for the previous year our share was greater because we increased our percentage interest during 1978. Our Canadian Metals Division improved its earnings because of increased sales, higher average metal prices and the incorporation of our increased interest in Whitehorse Copper Mines Ltd.

Our financial results were again affected by unrealized currency adjustments arising from the conversion of the working capital of our foreign subsidiaries to Canadian dollars. The net gain, after deducting minority interest, was $2.6 million.

The year was notable because the operating cash flow of the Company itself, after stay-in-business capital and development expenditures, was positive and on an upward trend through the year. It is also notable that the earnings of the Company have been positive for the last three quarters, although the level of earnings for the year and the operating cash flow once again do not reflect an adequate return on invested capital.

Metals

The corporate structure of the Company's interests in metals was changed significantly during 1978 as the result of investments which reflect a consolidation of our operating base in North America.

In Canada we increased our holding in Whitehorse Copper Mines to 100%. Although Whitehorse Copper has a limited life – the ore reserves being well delineated – we believe it is an important investment. Full ownership of Whitehorse Copper enables us to rationalize its exploration activities in the Yukon, a prospective area for mineral deposits, with those of our subsidiary, Hudson Bay Exploration and Development Company. The mine, however, will remain under its own management but will form part of the Canadian Metals Division.

In addition, in November we acquired a 37.5% interest in Tantalum Mining Corporation of Canada (Tanco) which has a tantalum mine and a lithium deposit at Bernic Lake in southeastern Manitoba. The other shareholders are Kawecki Berylco Industries, of New York (37.5%), and the Manitoba Development Corporation (25%), a Crown agency of the Manitoba government. This new investment has three attractions: firstly, Tanco has an operating tantalum mine and is generating a cash flow; secondly, the investment extends our diversification in natural resources; and thirdly, the mine's proximity to our Flin Flon operations, the centre of the Canadian Metals Division, will enable Tanco's operating personnel to take full advantage of that pool of expertise and experience. Tanco's Board of Directors will continue to set policy but the Canadian Metals Division will be responsible for overall operations. Although the current estimates of reserves of tantalum indicate that they will be depleted by 1982 at the current mining rate, further exploration is being undertaken. There are substantial undeveloped reserves of lithium and technical and marketing feasibility studies for development of the deposit are underway. Tanco's exploration activities will be coordinated with those of Hudson Bay Exploration.

In July, 1978, Inspiration Holdings Inc., a holding company owned equally by Hudson Bay Mining and Minerals and Resources Corporation Limited (Minorco), of Bermuda, completed a cash tender offer for common shares of Inspiration Consolidated Copper Company at U.S. $33 per share, which increased the holding company's interest to about 73%. With shareholder approval, Inspiration Holdings was merged into Inspiration Copper, effective January 1, 1979, with the result that Hudson Bay Mining and Minorco obtained ownership of all the outstanding common shares of Inspiration Copper and the common shares previously outstanding and held by others were converted into a new class of voting preferred shares. The preferred shares are redeemable at the option of the holders on specified dates beginning in February, 1979, and at the option of Inspiration Copper after 1981, for U.S. $33 per share plus accumulated and unpaid dividends. By March 30, 1979, 178,761 preferred shares will have been redeemed, leaving 713,583 preferred shares outstanding with a redemption value of U.S. $23,548,000.

As a result of the merger, Hudson Bay Mining and Minorco together own 100% of Inspiration Copper's common shares. This joint ownership of Inspiration Copper has enabled us to rationalize our current minerals activities in the U.S. It is intended that Inspiration Copper will undertake all new minerals business in the U.S. and all our exploration activities there will now be carried out by Inspiration Development Company, a wholly owned subsidiary of Inspiration Copper.

We believe our expanded investment in Inspiration Copper is an attractive long-term one. We are continuing an extensive review of Inspiration's operations to determine the optimum treatment processes, including a major review of the smelter to establish the optimum capacity in order to maximize the profits from domestic concentrates as well as from toll material. These studies may result in considerable capital expenditures. Construction of a $14-million solvent extraction plant to replace current cement copper production is already underway and it will be commissioned late in 1979.

The Canadian Metals Division expects to realize considerable savings when the concentrator at Stall Lake Mine is fully operational. The original cost estimate of $26 million has escalated to $33 million, due partly to labor disputes in the construction trades that interrupted construction, preventing the general contractor from

meeting work deadlines and, in addition, certain alterations in the original design contributed to the higher cost. Some contracts for the purchase of concentrates and for the refining of our anode copper expired at year-end and were renegotiated on more favorable terms. The benefits from these new contracts together with better prices for metals should improve the Division's financial results for 1979. Studies are underway to upgrade our metallurgical plants at Flin Flon, particularly the zinc plant. The Company has applied to the Clean Environment Commission of Manitoba for renewal of the stack licence, which expires this year. Shareholders were advised in mid-1978 that the Government of Saskatchewan will not renew our licence to operate our hydro-electric plant at Island Falls on the Churchill River in Saskatchewan when it expires on April 1, 1981. Separate evaluations are nearly completed and discussions to determine the compensation to be paid by the Saskatchewan Government for the plant in terms of the legislation are expected to begin in the near future.

Fertilizer and other agricultural products

Although revenues set a record, the earnings of 51%-owned Terra Chemicals International, Inc., of Sioux City, Iowa, were adversely affected by lower prices and higher operating costs, especially for natural gas. Terra has consolidated its wholesale and retailing activities into a new agricultural marketing division which includes the facilities of Riverside Chemical Company. An upgrading facility has been completed adjacent to the new ammonia plant at Woodward, Oklahoma, and urea-producing facilities at Port Neal, Iowa, were expanded during the year.

Industrial products

All three companies in our industrial operations group – 60%-owned Francana Minerals Ltd., Hudson Bay Diecastings Limited and Zochem Limited, both wholly owned – performed satisfactorily throughout the year. The last two companies were amalgamated into Hudson Bay Mining at year-end and now operate as separate divisions of the Company. The potash marketing group continued to act as sales agents in Eastern Canada for Cominco Ltd. until midyear when the agency agreement was sold to private interests. The new electroplating facility at Hudson Bay Diecastings began producing on schedule and resulted in an improvement in throughput. A new marketing campaign is underway aimed at broadening the market for chrome-plated diecastings to reduce the company's dependency on the automotive market. Zochem has solved its quality and production problems and regained its status in the marketplace.

Petroleum

Although prices were higher, market oversupply conditions resulted in lower sales of natural gas in Western Canada and a subsequent decrease in the contribution to our net earnings from 55%-owned Francana Oil & Gas Ltd. The contribution to our profits for 1978 by Trend International Limited, Francana's 57%-owned subsidiary, was approximately the same as in 1977. Our other sub-

Headframe and mill of Tantalum Mining Corporation of Canada Limited at Bernic Lake in southeastern Manitoba

sidiary, 62%-owned Canadian Merrill Ltd., was also affected by the gas shut-ins and in addition reported a substantial downward revision of its estimated reserves as at December 31, 1978, compared with reserves a year ago, which resulted in a higher depletion and amortization charge which reduced Merrill's profit accordingly.

Appointments

Dr. J. B. Howkins, J. R. Sadler and H. S. Schwartz were appointed Senior Vice-Presidents of Exploration, Canadian Metals Division, and Metallurgy, respectively. S. R. Horne was appointed Vice-President – Investments and G. A. C. MacRae, Vice-President – Finance and Administration, Canadian Metals Division.

Outlook

Metals

The long-awaited turnaround of the copper price began during the last half of 1978 and the strong upward momentum at year-end continued into the first quarter of 1979. Disruptions of copper supplies from offshore and North American producers as well as sustained strong demand in 1978, which is continuing, have reduced stocks overhanging the market and this, together with the lack of availability of good-grade cathode and wire-bars, should give rise to a firm base for copper in 1979. The recent rapid rises in copper prices, while not out of line with longer-term trends, may well cause some short-term reactions; however, these upward price movements are necessary for the long-term viability of the copper industry.

Lower zinc production has reduced stocks to more acceptable levels and is now in line with demand which should result in firm prices at current levels. Gold prices have risen, reflecting uncertainties in currencies, particularly the U.S. dollar, and will continue to reflect the nervousness in currency markets. Silver prices have increased as a result of a strong commercial demand that is likely to continue.

Fertilizers and other agricultural products

Fertilizer inventories are generally high, and supplies of anhydrous ammonia are excessive. Imported anhydrous ammonia and distress production are available at prices well below the cost of production in newer plants with high natural-gas costs. Inventories are being reduced, however, as high-cost or inefficient plants are being shut down and restrictions placed on some production. Terra should benefit from consolidation within the anhydrous ammonia industry in the future. Demand for fertilizer is expected to be strong in the 1979 spring planting season.

Industrial products

Although overall demand for photoconductive-grade zinc oxide is declining, Zochem expects to increase its sales and earnings moderately in 1979 by increasing its share of the market. Hudson Bay Diecastings' expanded electroplating facilities should result in higher sales and better earnings. Sales of salt cake should increase due to the continued strong demand for Canadian pulp but since the demand for detergent-grade sodium-sulphate is expected to decrease due to product reformulations, Francana Minerals anticipates little change in its earnings.

Petroleum

The improved prices and better taxation climate have resulted in a dramatic increase in exploration activity in Western Canada. This in turn has resulted in considerable surplus gas supplies that in the short-term could be exported to the United States and in the longer-term could be distributed to Quebec and the Maritimes through distribution facilities that would have to be extended. Despite the current oversupply situation, activity remains strong with land prices in particular increasing dramatically.

In the United States exploration and development drilling activity has been high, and the search for new reserves of oil and gas is likely to be intensified as a result of recent developments and the need to reduce the dependency of the U.S. on offshore supplies.

Conclusion

Our earnings for 1978 were clearly unsatisfactory and although our cash flows improved somewhat during the last half of the year, they too, were unsatisfactory. Earnings and cash flows will have to increase substantially before a reasonable return on capital investment is earned, particularly if replacement values of assets are taken into account. However, prices for metals, crude oil and natural gas have strengthened considerably, and the copper price, in particular, has climbed dramatically. Furthermore, there is a much greater awareness at the federal and provincial government levels of the impact their fiscal policies have had on the mining industry. Thus, despite the economic uncertainties, there have been enough positive developments in the recent past to justify an optimistic view for the year ahead.

This year we hope to complete our studies for upgrading our metallurgical plants both in the Canadian Metals Division and at Inspiration Copper. These capital expenditures, if undertaken, would be substantial, but should result in significant benefits. Our balance sheet remains strong, even though we committed substantial expenditure on investments – largely in copper – which we feel were made at an appropriate time in the copper cycle, and the Company has sufficient financial strength to undertake the upgrading mentioned above as well as to pursue new opportunities in the natural-resource area.

In the light of the higher metal prices and the improved outlook, the Board of Directors decided to resume payments of dividends and a dividend of 10¢ per common share was declared on January 30, 1979, the first dividend since July, 1977.

On behalf of the Board,

Chairman

President

March 7, 1979

Hudson Bay Mining and Smelting Co., Limited

Financial Statements

For the years ended December 31, 1978 and 1977

Statements of earnings

For the years ended December 31, 1978 and 1977

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Revenues:				
Net sales	$458,665	$346,346	$172,190	$154,178
Interest and other income (Note 10)	24,569	18,890	9,012	9,382
	483,234	**365,236**	**181,202**	**163,560**
Costs and expenses:				
Cost of sales	368,482	240,512	154,654	133,671
Depreciation, depletion and amortization	35,510	31,233	14,974	13,785
Exploration expenses	3,375	2,755	3,172	2,534
General administrative expenses	15,540	13,844	5,902	6,253
Interest (Note 5)	14,931	12,041	8,208	8,152
	437,838	**300,385**	**186,910**	**164,395**
Earnings (loss) before taxes	45,396	64,851	(5,708)	(835)
Income taxes, mining taxes and royalties:				
Mining taxes and royalties	11,183	13,967	100	4,962
Income taxes (recoveries) (Note 11)	13,255	26,670	(2,397)	(1,074)
	24,438	**40,637**	**(2,297)**	**3,888**
Earnings (loss) from operations	**20,958**	**24,214**	**(3,411)**	**(4,723)**
Other items:				
Minority interest in earnings of subsidiaries	(13,739)	(16,677)	—	—
Share of earnings of subsidiary companies	—	—	10,630	12,282
Share of losses of associated companies	(1,783)	(2,620)	(1,783)	(2,642)
Provision for future write-offs of investments	(343)	(504)	(343)	(504)
	(15,865)	(19,801)	8,504	9,136
Earnings before extraordinary items:	**5,093**	**4,413**	**5,093**	**4,413**
Extraordinary items (Note 12)	—	52,577	—	52,577
Net earnings for the year	**$ 5,093**	**$ 56,990**	**$ 5,093**	**$ 56,990**
Earnings per share (Note 9):				
Before extraordinary items	**$ 0.50**	**$ 0.44**	**$ 0.50**	**$ 0.44**
After extraordinary items	**$ 0.50**	**$ 5.64**	**$ 0.50**	**$ 5.64**

Statements of retained earnings

For the years ended December 31, 1978 and 1977

Retained earnings at beginning of the year	$183,508	$132,579	$183,508	$132,579
Net earnings for the year	5,093	56,990	5,093	56,990
	188,601	189,569	188,601	189,569
Dividends – 1977 – $0.60 per share	—	6,061	—	6,061
Retained earnings at end of the year	$188,601	$183,508	$188,601	$183,508

See accompanying notes to the financial statements.

Statements of financial position

As at December 31, 1978 and 1977

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Current assets:				
Cash	$ 8,067	$ 11,585	$ 512	$ 309
Short-term securities	91,142	144,485	70,400	128,740
Accounts receivable	72,624	53,632	19,151	16,227
Inventories – metals and metal products	47,681	43,994	47,681	41,081
– fertilizers and chemicals	47,262	41,446	—	—
Income taxes recoverable	4,329	2,508	1,213	—
Total current assets	271,105	297,650	138,957	186,357
Deduct:				
Current liabilities:				
Accounts and notes payable (Note 4)	69,704	64,787	42,072	27,825
Accrued liabilities	17,532	11,350	9,534	10,699
Deferred petroleum income	6,413	3,354	—	—
Income and other taxes payable	6,106	277	—	673
Current portion of long-term debt	975	2,344	—	—
Total current liabilities	100,730	82,112	51,606	39,197
Working capital	**170,375**	**215,538**	**87,351**	**147,160**
Add:				
Investments (Note 2)	69,792	42,927	161,005	137,290
Property, plant and equipment (Note 3)	309,245	258,962	128,579	91,313
Other assets	19,653	19,197	17,077	16,074
Capital employed	**569,065**	**536,624**	**394,012**	**391,837**
Deduct:				
Long-term debt (Note 5)	124,855	110,994	72,514	73,879
Deferred income taxes	89,979	83,845	61,650	63,203
Minority interest in subsidiaries	94,383	87,030	—	—
	309,217	281,869	134,164	137,082
Shareholders' investment	**$259,848**	**$254,755**	**$259,848**	**$254,755**
Investment represented by:				
Share capital (Notes 7 and 8)	$ 71,247	$ 71,247	$ 71,247	$ 71,247
Retained earnings	188,601	183,508	188,601	183,508
Total shareholders' investment	**$259,848**	**$254,755**	**$259,848**	**$254,755**

Approved by the Board of Directors

Director: H. R. Fraser

Director: E. P. Gush

See accompanying notes to the financial statements.

Statements of changes in financial position

For the years ended December 31, 1978 and 1977

	Consolidated 1978	Consolidated 1977	Unconsolidated 1978	Unconsolidated 1977
	(in thousands)			
Working capital provided:				
Operations:				
Earnings (loss) from operations	$ 20,958	$ 24,214	$ (3,411)	$ (4,723)
Depreciation, depletion and amortization	35,510	31,233	14,974	13,785
Deferred income taxes	6,134	10,386	(2,397)	3,832
Share of earnings of joint venture	(1,270)	—	—	—
	61,332	65,833	9,166	12,894
Dividends from subsidiary companies	—	—	3,007	3,651
Dividends from associated companies	—	162	—	153
Cash distribution from joint venture	1,989	—	—	—
	63,321	65,995	12,173	16,698
Net proceeds from sale of potash division assets less current income taxes (Note 12)	—	140,764	—	140,764
Proceeds from long-term debt	18,809	16,200	—	—
Realization of investments	—	2,670	—	6,558
Working capital of wholly owned subsidiaries amalgamated with parent company at December 31, 1978	—	—	3,495	—
	82,130	**225,629**	**15,668**	**164,020**
Working capital applied:				
Dividends	—	6,061	—	6,061
Dividends paid by subsidiaries to minority interests	6,277	6,152	—	—
Investment in subsidiary companies (Note 2)	5,497	2,895	8,522	—
Other investments (Note 2)	26,472	8,411	25,167	1,776
Property, plant and equipment	83,354	64,771	39,439	28,328
Reduction of long-term debt	5,237	6,133	1,365	3,702
Increase in other assets	456	1,426	984	1,333
	127,293	**95,849**	**75,477**	**41,200**
Increase (decrease) in working capital	**(45,163)**	**129,780**	**(59,809)**	**122,820**
Working capital at beginning of the year	**215,538**	**85,758**	**147,160**	**24,340**
Working capital at end of the year	**$170,375**	**$215,538**	**$ 87,351**	**$147,160**
Changes in working capital represented by:				
Increase (decrease) in current assets:				
Cash	$ (3,518)	$ 6,967	$ 203	$ 306
Short-term securities	(53,343)	98,366	(58,340)	100,603
Accounts receivable	18,992	4,716	2,924	(76)
Inventories – metals and metal products	3,687	10,053	6,600	11,683
– fertilizers and chemicals	5,816	18,669	—	(1,074)
Income taxes recoverable	1,821	2,508	1,213	—
	(26,545)	141,279	(47,400)	111,442
(Increase) decrease in current liabilities:				
Accounts and notes payable	(4,917)	(17,226)	(14,247)	5,583
Accrued liabilities	(6,182)	252	1,165	(2,734)
Dividend payable	—	2,020	—	2,020
Deferred petroleum income	(3,059)	(3,354)	—	—
Income and other taxes payable	(5,829)	6,611	673	5,298
Current portion of long-term debt	1,369	198	—	1,211
	(18,618)	(11,499)	(12,409)	11,378
Increase (decrease) in working capital	$(45,163)	$129,780	$(59,809)	$122,820

See accompanying notes to the financial statements.

1. Summary of significant accounting policies

Generally accepted accounting principles:

The financial statements are prepared in conformity with generally accepted accounting principles in Canada.

Principles of consolidation:

The consolidated financial statements include the accounts of Hudson Bay Mining and Smelting Co., Limited and all companies more than 50%-owned. In addition, the Company follows the equity method of accounting for its interest in associated companies in which it owns from 20% to 50% of the common shares.

Unconsolidated financial statements:

In the unconsolidated financial statements, the Company follows the equity method of accounting for its investments in the subsidiary companies.

Inventories, materials and supplies:

Inventories of metals, fertilizers and chemicals and all other saleable products are valued at the lower of cost or estimated net realizable value, metal byproducts are valued at estimated net realizable value. Materials and supplies are valued at cost. Cost is determined on the first-in, first-out basis, except the inventories of a subsidiary, Terra Chemicals International, Inc., which are valued on the last-in, first-out basis and which represent substantially all of the inventories of fertilizers and chemicals.

Property, plant and equipment:

Mineral properties – Exploration costs with respect to mines operating, or in the development stage, are capitalized as mineral properties and amortized by the unit-of-production method based on estimated recoverable reserves; all other mineral exploration costs are written off to expense as incurred.

Mine development expenditures – Expenditures on major mine development are capitalized and amortized by the unit-of-production method for each mine based on estimated recoverable reserves.

Petroleum properties – Petroleum properties are accounted for on the full-cost basis whereby all costs relating to the exploration for and the development of petroleum resources are capitalized whether productive or nonproductive and amortized by the unit-of-production method based on estimated recoverable reserves.

Plant and equipment – Expenditures for plant and equipment additions, major replacements and improvements are capitalized in the property accounts; the cost of maintenance and repairs is charged to operating expense as incurred.

Depreciation of metal and petroleum plant and equipment is charged to operations by the unit-of-production method based on estimated recoverable reserves. Depreciation of other plant and equipment is charged to operations generally on a straight-line basis over their estimated useful lives.

Deferred income taxes:

Deferred income taxes represent primarily tax reductions for expenditures on mine development, petroleum and other properties, cost of participation in certain mining companies, and depreciation deducted in the determination of taxable income but not yet charged to earnings.

Prior to 1978, Indonesian income taxes were determined under contract with the government and generally allowed for deduction of all costs incurred, although certain of these costs were capitalized and amortized for financial reporting purposes. Deferred Indonesian income taxes were not provided for relative to these timing differences since additional future taxes were to be met by increased oil allocations under the production-sharing contract.

As a result of changes to the production-sharing contract effective January 1, 1978, Indonesian income taxes are based on revenue and expense and therefore deferred income taxes are now being provided for relative to timing differences arising after that date.

Foreign currency translation:

The financial statements are expressed in Canadian dollars. Foreign currencies have been translated into Canadian dollars as follows: revenue, costs and expenses of foreign subsidiaries at the average rates of exchange for the period; noncurrent assets (including depreciation, depletion and amortization thereof) and noncurrent liabilities at rates in effect at dates of transactions; current assets and liabilities at rates in effect at the end of the year. Gains and losses on currency translations are included in the statements of earnings.

2. Investments

Details of investments, including advances, are as follows:

	Consolidated 1978	Consolidated 1977	Unconsolidated 1978	Unconsolidated 1977
	(in thousands)			
Associated companies	$ 46,302	$ 31,324	$ 46,302	$ 31,324
Subsidiary companies	—	—	117,832	109,338
Partnerships	18,632	14,115	—	—
Joint venture	7,138	—	—	—
Other – at cost:				
Quoted (market value 1978 – $662,000; 1977 – $398,000)	1,376	1,035	1,376	1,035
Unquoted	9,173	8,950	8,531	8,297
	82,621	55,424	174,041	149,994
Less provision for future write-offs	12,829	12,497	13,036	12,704
	$ 69,792	$ 42,927	$161,005	$137,290

The investment in associated companies comprises the following:

	% of common share ownership 1978	% of common share ownership 1977	Equity in underlying net assets 1978	Equity in underlying net assets 1977
			(in thousands)	
Tantalum Mining Corporation of Canada Limited	37.5%	—	$ 2,453	$ —
Lytton Minerals Limited	33.9%	33.9%	132	142
Ambay Services Limited	50.0%	50.0%	105	109
Whitehorse Copper Mines Ltd.	—	41.2%	—	4,789
Inspiration Consolidated Copper Company	36.5%	23.4%	36,556	24,064
Equity in net assets			39,246	29,104
Unamortized excess of cost of investment over equity in net assets			7,056	2,220
Total investment			$ 46,302	$ 31,324

The unamortized excess cost is being written off against the Company's share of earnings from the associated companies generally over a period of 20 years.

During 1978, the Company and a related company, Minerals and Resources Corporation Limited, through a jointly owned holding company, increased its holdings in Inspiration Consolidated Copper Company to 36.5% for a cash consideration of approximately $16,600,000, which exceeded the Company's equity in the underlying net assets by approximately $1,800,000 (see Note 6).

Effective November, 1978, the Company acquired a 37.5% interest in Tantalum Mining Corporation of Canada Limited, a mining company situated in the Province of Manitoba, Canada, for a cash consideration of approximately $5,000,000, which exceeded the Company's equity in the underlying net assets by $2,700,000.

The Company's equity in the underlying net assets of its subsidiaries amounts to $107,743,000 at December 31, 1978, and $98,728,000 at December 31, 1977. The unamortized excess cost of investment over equity value amounting to $10,089,000 at December 31, 1978, and $10,610,000 at December 31, 1977, is included in property, plant and equipment.

During 1978, the Company increased its interest in Whitehorse Copper Mines Ltd. to 100%. As a result, Whitehorse Copper Mines Ltd. has been reclassified as a subsidiary, effective July 1, 1978. The following is a summary of the noncurrent assets and liabilities at July 1, 1978, the effective date of acquisition:

	(in thousands)
Property, plant and equipment less accumulated depreciation and depletion	$ 2,681
Investment in Joint Venture	7,958
Noncurrent liabilities	(290)
	10,349
Investment at effective date of acquisition	4,852
Cost of acquisition less working capital acquired – $3,025,000	$ 5,497

During 1977, the Company increased its interest in Canadian Merrill Ltd. to 61.9%. As a result, Canadian Merrill Ltd. has been reclassified as a subsidiary, effective January 1, 1977.

The following is a summary of the noncurrent assets and liabilities at January 1, 1977, the effective date of acquisition:

	(in thousands)
Property, plant and equipment less accumulated depreciation and depletion	$32,384
Other assets	797
Noncurrent liabilities including minority interest	(18,624)
	14,557
Investment at January 1, 1977 (including equity in earnings)	11,662
Working capital deficiency at effective date of acquisition	$ 2,895

The excess of cost of the investment over the underlying equity in the net assets at the effective date of acquisition of $2,211,000 has been ascribed to property, plant and equipment and is being amortized against earnings on a straight-line basis over a period of 20 years.

The investment in partnerships represents Terra Chemicals International, Inc.'s 25% interest in an ammonia production facility and 65% interest in a nitrogen product upgrading facility. The investment at December 31, 1978, of $18,632,000 consists principally of Terra's equity contributions, advances and deferred preoperating costs, reduced by the company's share of operating losses to date.

The Company makes provision in amounts which it considers prudent for future write-offs of investments which may be unprofitable.

Other investments during the year as shown on the Statements of Changes in Financial Position comprise the following:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Inspiration Consolidated Copper Company	$16,576	$ 742	$16,576	$ 742
Tantalum Mining Corporation of Canada Limited	5,006	—	5,006	—
Partnerships	4,517	6,300	—	—
Other – net	373	1,369	3,585	1,034
	$26,472	$ 8,411	$25,167	$ 1,776

3. Property, plant and equipment

The following is a summary of property, plant and equipment at cost by major operating divisions:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Metals	$186,112	$146,622	$157,984	$128,438
Fertilizers and chemicals	79,380	69,415	—	—
Petroleum	185,872	158,293	—	—
Industrial	20,406	17,511	14,067	—
	471,770	391,841	172,051	128,438
Less accumulated depreciation and depletion	201,453	169,120	82,221	73,136
	270,317	222,721	89,830	55,302
Unamortized mine development expenditures	38,928	36,241	38,749	36,011
	$309,245	$258,962	$128,579	$ 91,313

4. Accounts and notes payable

This item comprises the following:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Accounts payable	$64,960	$63,217	$31,442	$22,496
Loans from subsidiaries	—	—	10,630	5,329
Bank loan	4,744	1,570	—	—
	$69,704	$64,787	$42,072	$27,825

The Company and its major subsidiaries have lines of credit aggregating approximately $70,000,000 with Canadian and United States banks with interest at bank prime rates.

The maximum amount of short-term borrowings outstanding during 1978 and 1977 was $30,000,000 and $10,000,000, respectively, and the approximate average amount outstanding during each year was $12,000,000 and $5,000,000 with weighted average interest rates of 8.7% and 8.9%.

5. Long-term debt

Details of the long-term debt are as follows:

	Consolidated 1978	Consolidated 1977	Unconsolidated 1978	Unconsolidated 1977
	(in thousands)			
Hudson Bay Mining and Smelting Co., Limited:				
9% unsecured debentures due 1991	$ 21,750	$ 23,115	$ 21,750	$ 23,115
10½% unsecured debentures due 1995 (U.S. $50,000,000)	50,764	50,764	50,764	50,764
Whitehorse Copper Mines Ltd.:				
Mortgage loans	295	—	—	—
Canadian Merrill Ltd.:				
Secured bank production loans	16,303	15,248	—	—
Other (1978 – U.S. $595,000; 1977 – U.S. $887,000)	630	931	—	—
Terra Chemicals International, Inc.:				
9⅝% unsecured notes (U.S. $17,500,000)	17,760	17,760	—	—
8¾% unsecured notes (U.S. $15,000,000)	16,884	—	—	—
Unsecured bank term loans (U.S. $4,000,000)	—	4,100	—	—
Other (1978 – U.S. $1,196,000; 1977 – U.S. $1,194,000)	1,343	1,289	—	—
	125,729	113,207	72,514	73,879
Current portion due within one year included in current liabilities	874	2,213	—	—
	$124,855	$110,994	$ 72,514	$ 73,879

(a) Under the trust indenture covering the 9% unsecured debentures, sinking fund payments sufficient to retire $800,000 of principal amount are required each year until 1990. The Company has the option to redeem the debentures at prices ranging downward from 105.15% currently to 100% in 1988 and thereafter. Debentures redeemed through the operations of the sinking fund are callable at par. Debentures amounting to $3,250,000 (principal amount) have been purchased by the Company and cancelled. Therefore, no sinking fund payments have been required to date and $1,650,000 is available for application against future sinking fund requirements.

(b) Under the trust indenture covering the 10½% unsecured debentures, sinking fund payments sufficient to retire U.S. $3,330,000 of principal amount each year from 1981 to 1994, inclusive, are required. The Company has the option to redeem the debentures at prices ranging downward from 108.4% currently to 100% in 1990 and thereafter. Debentures redeemed through the operations of the sinking fund are callable at par.

(c) The bank production loans of Canadian Merrill Ltd. include $7,961,000 in 1978 and $6,906,000 in 1977 payable in United States currency (U.S. $7,483,000 and $6,583,000 respectively) and are repayable in monthly instalments of $22,000 until December 1981, and $200,000 thereafter. The loans are secured primarily by an assignment of interests in certain producing properties and bear interest, with minor exceptions, at rates not exceeding ¾ of 1% above bank prime rate.

(d) The 9⅝% unsecured notes of Terra Chemicals International, Inc. are repayable in equal annual instalments of U.S. $1,000,000 from 1980 to 1995, with the balance due in 1996.

(e) The 8¾% of unsecured notes of Terra Chemicals International, Inc. are repayable in equal annual instalments of U.S. $1,000,000 from 1984 to 1998.

Interest and related expenses on long-term debt were:

	1978	1977
	(in thousands)	
Hudson Bay Mining and Smelting Co., Limited	$ 8,194	$ 7,820
Consolidated subsidiaries	5,534	3,117
	$13,728	$10,937

Sinking fund and principal payments, after allowing for prepayments, required over the next five years are as follows:

	Consolidated Canadian funds	Consolidated U.S. funds	Unconsolidated Canadian funds	Unconsolidated U.S. funds
	(in thousands)			
1979	$ —	$ 810	$ —	$ —
1980	—	1,735	—	—
1981	750	4,904	750	3,330
1982	2,192	5,545	800	3,330
1983	2,192	5,290	800	3,330

6. Commitments and contingent liabilities

During 1978 the Company received a reassessment notice from the Department of National Revenue disallowing the deduction of a nonrefundable contribution for construction to Manitoba Hydro made in 1973, which was, in the opinion of the Company, a proper deduction. On the advice of its counsel, the Company has filed a formal Notice of Objection to the reassessment. Income taxes, penalties and interest paid with respect to the reassessment, aggregating $2,300,000, have not been charged to earnings pending settlement of the reassessment. Should the reassessment be upheld, the tax and related costs would be charged to retained earnings as a prior period adjustment.

During 1973, an action was brought alleging infringement by the Company with respect to certain patents relating to the processing of potash. In the opinion of the Company and its counsel, the patents are not infringed and accordingly the Company has a good defence to the action on its merits.

In conjunction with a reorganization effective January 1, 1979, of Inspiration Consolidated Copper Company, an associated company (see Note 2), the holders of the voting preferred shares of the reorganized Inspiration have the option to submit their shares for redemption. After December 31, 1981, Inspiration can acquire the preferred shares pursuant to the redemption privileges attached thereto. The Company has undertaken to finance its share of such redemptions, which share could amount to approximately U.S. $14,750,000.

A subsidiary, Terra Chemicals International, Inc., is contingently liable for discounted notes subject to recourse aggregating U.S. $5,323,000 at December 31, 1978 (U.S. $4,132,000 at December 31, 1977) and is a 25% guarantor of $90,000,000 of first mortgage notes payable of the ammonia production facility partnership referred to in Note 2.

In addition, Terra is committed to various noncancelable leases expiring at various dates through 1989 and requiring aggregate minimum rental payments as follows:

1979	U.S. $ 1,914,000
1980	1,592,000
1981	1,295,000
1982	1,143,000
1983	1,051,000
1984 and thereafter	5,454,000
	U.S. $12,449,000

Total rental expense under all leases, including short-term cancelable leases, was approximately U.S. $2,766,000 and U.S. $1,258,000 for 1978 and 1977, respectively.

7. Share capital

During 1978, the Company was granted continuance under the Canada Business Corporations Act. The Articles of Continuance provide that the Class "A" and Class "B" shares be reclassified as a single class of Common Shares effective January 1, 1979.

In 1978 the Company was authorized to issue an unlimited number of Class "A" and Class "B" convertible common shares which were freely interconvertible at any time, on a one-for-one basis, at the option of the shareholder and ranked equally in all respects, except that it was the Company's practice to pay tax-deferred dividends to the Class "B" shareholders out of 1971 capital surplus, as defined in the Canadian Income Tax Act. For Canadian income tax purposes, tax-deferred dividends were not taxable when received by the shareholder, but reduced the adjusted cost base of his shares for capital-gains determination. This option expired at December 31, 1978, after which all cash dividends will be treated in the same manner as Class "A" dividends.

In addition, the Articles of Continuance authorize the Directors to determine, with respect to any cash dividend declared, that shareholders in specified jurisdictions may elect to receive such dividend as a stock dividend payable in Common Shares. The new Canadian tax treatment of stock dividends is similar to the tax treatment of the cash dividends paid on the Company's Class "B" Shares out of 1971 capital surplus.

As at December 31, 1978 and 1977, there were issued and fully paid 10,101,739 shares consisting of:

	1978	1977
Class "A" shares	4,875,529	5,177,609
Class "B" shares	5,226,210	4,924,130
	10,101,739	10,101,739

8. Share-option plan

Under the Company's 1973 Share Option Plan for full-time officers and key employees, 200,000 unissued shares are reserved for granting of options at prices not less than 95% of the market value (full market value in the case of United States citizens) on the day the option is granted. No options have been granted under this plan.

9. Earnings per share

Earnings per share are calculated on the weighted average number of shares outstanding (10,101,739 for 1978 and 1977).

10. Interest and other income

This amount comprises the following:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Interest income	$11,765	$10,403	$ 8,073	$ 7,569
Share of earnings of joint venture	1,270	—	—	—
Unrealized exchange gains on translation of subsidiaries' accounts	5,191	4,861	—	—
Miscellaneous	6,343	3,626	939	1,813
	$24,569	$18,890	$ 9,012	$ 9,382

11. Income taxes

Income tax expense comprises the following:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
	(in thousands)			
Current taxes	$ 7,121	$16,284	$ —	$(4,906)
Deferred taxes	6,134	10,386	(2,397)	3,832
	$13,255	$26,670	$(2,397)	$(1,074)

The reconciliation of the combined statutory income tax rates and the effective income tax rate is as follows:

	Consolidated		Unconsolidated	
	1978	1977	1978	1977
Combined statutory income tax rates	48.0%	48.0%	(50.0)%	(50.0)%
Inventory allowance	(1.3)	(0.7)	(9.6)	(54.7)
Tax credits, rebates and allowances	(18.2)	(11.2)	9.0	(39.2)
Prior years' adjustments	—	(0.1)	—	(9.9)
Difference between Canadian and foreign tax rates	4.8	10.5	—	—
Nontaxable and nondeductible items	(4.1)	(5.4)	8.6	25.2
Effective income tax (recovery) rate	29.2%	41.1%	(42.0)%	(128.6)%

The Company has available for application against future Canadian federal income taxes payable, if any, investment tax credits of approximately $3,500,000, which expire in the years 1981 to 1983.

12. Extraordinary items

The 1977 extraordinary items consist of the following:

Gain on sale of potash division assets, less estimated income taxes	$ 53,121,000
Loss on disposal of investments, less income taxes	544,000
	$ 52,577,000

In April 1977, the Company sold all of the assets, other than working capital, of its Sylvite of Canada potash division for a net cash consideration of $143,164,000. The sale resulted in an extraordinary gain, after income taxes, of $53,121,000 as follows:

Net proceeds		$143,164,000
Book value of assets sold		56,243,000
		86,921,000
Estimated income taxes:		
Current	$ 2,400,000	
Deferred	31,400,000	33,800,000
		$ 53,121,000

13. Retirement plans

The Company and its subsidiaries maintain noncontributory retirement plans which cover substantially all salaried and hourly paid employees.

Total cost of the plans approximated $4,626,000 in 1978 and $5,556,000 in 1977, including past-service costs of $1,785,000 and $4,285,000 in the respective years.

The unfunded past-service costs with respect to all the plans were approximately $12,000,000 as at December 31, 1978 (1977 – $14,000,000), including unfunded vested benefits of approximately $9,000,000 (1977 – $10,000,000) and are being funded and amortized over periods not exceeding 13 years.

14. Business segment reporting (unaudited)

Included in the supplementary financial information set out elsewhere in the annual report are unaudited financial data for 1978 and 1977 pertaining to the business segments of the Company as required by Statement of Financial Accounting Standards No. 14 issued by the Financial Accounting Standards Board. The business segments reported, as approved by the Board of Directors, are considered to be those which most appropriately reflect the operating divisions of the Company.

15. Current replacement cost information (unaudited)

The Company, like other companies and individuals, is affected by inflation. Its most direct effect is to increase the Company's costs of operations. The Company establishes the sales prices of its products primarily on the basis of competitive market conditions, rather than directly on costs incurred and as a result has not been able to maintain a gross margin percentage in line with levels experienced in prior years. Consequently, the impact of inflation on the Company's earnings is not readily determinable.

In addition, replacing items of plant and equipment with assets having equivalent capacity would require a substantially greater capital investment than was originally required for the existing assets.

The Securities and Exchange Commission of the United States now requires certain companies to include in their annual Form 10-K filing certain information concerning the estimated replacement cost of their productive facilities and inventories, and concerning depreciation and cost of products sold computed on the basis of such replacement cost. This information has been included in the Company's Form 10-K (a copy of which is available on request).

16. Quarterly financial data (unaudited)

Summarized quarterly financial data (in thousands of dollars except for per-share amounts) for 1978 and 1977 are as follows:

	Quarters ended			
	March 31	June 30	Sept. 30	Dec. 31
1978				
Net sales	$ 85,833	$173,923	$103,447	$ 95,462
Earnings before taxes and royalties	6,804	18,322	11,040	9,230
Net earnings (loss)	(1,640)	4,356	969	1,408
Earnings (loss) per share	(0.16)	0.43	0.09	0.14
1977				
Net sales	$ 72,744	$122,328	$ 66,542	$ 84,732
Earnings before taxes and royalties	14,851	27,210	5,692	17,098
Earnings (loss) before extraordinary items	(274)	7,670	(2,384)	(599)
Net earnings (loss)	(274)	60,025	(2,384)	(377)
Earnings (loss) per share:				
Before extraordinary items	(0.03)	0.76	(0.23)	(0.06)
After extraordinary items	(0.03)	5.94	(0.23)	(0.04)

Auditors' report

To the Shareholders of
Hudson Bay Mining and Smelting Co., Limited:

We have examined the consolidated and unconsolidated statements of financial position of Hudson Bay Mining and Smelting Co., Limited and subsidiary companies as at December 31, 1978 and 1977, and the consolidated and unconsolidated statements of earnings, retained earnings and of changes in financial position for the years then ended. Our examination was made in accordance with auditing standards generally accepted in Canada, and accordingly included such tests and other procedures as we considered necessary in the circumstances. We did not examine financial statements of certain investments which have been accounted for using the equity method of accounting or of certain subsidiaries. The earnings from these entities comprised 47% and 3% of the net earnings in 1978 and 1977, respectively; the sales of the subsidiaries comprised 48% and 33% of the consolidated sales, and their assets comprised 25% and 17% of the consolidated assets for the years 1978 and 1977, respectively. The financial statements with respect to the investments and subsidiaries were reported upon by other auditors and our opinion, insofar as it relates to the amounts included for such entities, is based solely upon reports of the other auditors.

In our opinion, based upon our examination and the reports of other auditors, these consolidated and unconsolidated financial statements present fairly the financial position of the company as at December 31, 1978 and 1977, and the results of its operations and the changes in its financial position for the years then ended in accordance with accounting principles generally accepted in Canada applied on a consistent basis.

Toronto, Canada
February 16, 1979

Deloitte Haskins & Sells
Chartered Accountants

Financial review and management's discussion and analysis of the statements of earnings

This discussion relates solely to the consolidated results. The largest contributors to our net earnings were our petroleum subsidiaries followed by the Canadian Metals Division. The 1978 results reflect the Company's increased equity interest in Whitehorse Copper Mines Ltd., up from 41% to 100%, and in Inspiration Consolidated Copper Company, up from 23% to 36.5%. The 1977 comparisons with 1976 are affected by the consolidation as of January 1, 1977, of Canadian Merrill Ltd., which in prior years had been treated as an associated company. During the fourth quarter of 1977 Terra Chemicals International, Inc., acquired its Riverside distribution operations. Unrealized currency gains in 1978 arising from the conversion of the working capital of our foreign subsidiaries to Canadian dollars totalled $2.6 million after deducting minority interest, compared with $2.3 million in 1977.

Consolidated net sales increased significantly during the year primarily because of increased fertilizer and chemical volumes, and also because of higher volumes and, in most cases, higher prices of metal sales. Metals sales reached $161,077,000 in 1978, compared with $131,619,000 in 1977, an increase of 22% attributable to greater deliveries of copper and particularly zinc and rising average unit selling prices for copper, gold and silver. Free market

1978 operations by segment (in thousands)	**Metals**	**Fertilizers and chemicals**	**Petroleum**	**Industrial**	**Corporate**	**Adjustments and eliminations**	**Consolidated**
Revenue							
Canadian operations:							
Canada	$ 64,793	$ —	$ 33,307	$ 11,356	$ —	$ —	$109,456
Export – United States	37,492	—	1,689	13,259	—	—	52,440
Export – Europe	58,792	—	—	—	—	—	58,792
Foreign operations:							
United States	—	197,526	3,744	—	—	—	201,270
Southeast Asia	—	—	36,707	—	—	—	36,707
Sales to unaffiliated customers	161,077	197,526	75,447	24,615	—	—	458,665
Intersegment sales – within Canada	13,946	—	—	—	—	(13,946)	—
Interest income:							
Canada	187	—	113	5	8,026	—	8,331
United States/Europe	—	2,110	1,324	—	—	—	3,434
Other income	—	—	—	—	—	12,804	12,804
Total revenue	$175,210	$199,636	$ 76,884	$ 24,620	$ 8,026	$ (1,142)	$483,234
Operating profit							
Canada	$ 1,250	$ —	$ 17,681	$ 1,484	$ 8,026		$ 28,441
United States	—	6,337	2,024	—	—		8,361
Southeast Asia	—	—	28,577	—	—		28,577
	$ 1,250	$ 6,337	$ 48,282	$ 1,484	$ 8,026		65,379
Other corporate revenue							247
General corporate expenses							(5,299)
Interest expense							(14,931)
Earnings before taxes							$ 45,396
Identifiable assets:							
Canada	$178,849	$ —	$103,596	$ 8,963	$121,931		$413,339
United States	38,003	154,600	30,184	—	—		222,787
Southeast Asia	—	—	33,669	—	—		33,669
Total identifiable assets	$216,852	$154,600	$167,449	$ 8,963	$121,931		$669,795
Depreciation, depletion and amortization expense	$ 15,406	$ 5,348	$ 13,373	$ 1,102	$ 281		$ 35,510
Capital expenditures	$ 41,389	$ 9,967	$ 28,931	$ 2,896	$ 171		$ 83,354

copper prices were higher during the year and the Canadian producer prices rose even further as a reflection of the decline in the value of the Canadian dollar against all major currencies. Sales of metals during 1977 decreased by 15% from those of 1976, due mainly to reduced deliveries and a falling average unit selling price for zinc as these markets remained weak.

For 1978, fertilizers and chemicals sales rose to $197,526,000 from $115,916,000 in 1977, and the Riverside operations of Terra Chemicals accounted for $73,085,000 of this increase; the remainder was due to a greater volume of deliveries. Sales of fertilizers and chemicals for 1977 decreased by 9% from those of 1976, due to the sale by Hudson Bay Mining of its potash division.

Sales of oil and gas fell to $75,447,000 in 1978, or 2% below the 1977 figure, primarily because a change in the method of revenue determination arising from the revised production-sharing contract caused revenue from the Indonesian operations to decline substantially; the Indonesian revenue and the applicable tax provision are not comparable with those of the previous year due to the contract changes. This decline was offset by the dollar value of Canadian petroleum revenues despite a 10% decrease in natural gas deliveries. Industrial division sales increased to $24,615,000 from $21,744,000 in 1977 as a result of increased volume of sales and generally higher prices.

During 1978 costs of sales reached $368,482,000, an increase of 53% over $240,512,000 in 1977; the inclusion of Terra's Riverside operations contributed $71,815,000 of this increase. All business segments experienced higher costs for labor, energy and materials.

Other income increased as Whitehorse Copper Mines Ltd. became a wholly owned subsidiary during 1978, and subsequent to this acquisition, its share of joint-venture

1977 operations by segment (in thousands)

	Metals	Fertilizers and chemicals	Petroleum	Industrial	Corporate	Adjustments and eliminations	Consolidated
Revenue							
Canadian operations:							
Canada	$ 56,827	$ 5,124	$ 29,651	$ 9,280	$ —	$ —	$100,882
Export – United States	20,619	3,942	—	12,464	—	—	37,025
Export – Europe	54,173	—	—	—	—	—	54,173
Foreign operations:							
United States	—	106,850	2,206	—	—	—	109,056
Southeast Asia	—	—	45,210	—	—	—	45,210
Sales to unaffiliated customers	131,619	115,916	77,067	21,744	—	—	346,346
Intersegment sales – within Canada	7,672	—	—	—	—	(7,672)	—
Interest income:							
Canada	87	—	127	12	7,514	—	7,740
United States/Europe	—	2,007	656	—	—	—	2,663
Other income	—	—	—	—	—	8,487	8,487
Total revenue	$139,378	$117,923	$ 77,850	$ 21,756	$ 7,514	$ 815	$365,236
Operating profit:							
Canada	$ 2,398	$ 7,732	$ 15,279	$ 978	$ 7,514		$ 33,901
United States	—	17,609	519	—	—		18,128
Southeast Asia	—	—	31,784	—	—		31,784
	$ 2,398	$ 25,341	$ 47,582	$ 978	$ 7,514		83,813
Other corporate revenue							279
General corporate expenses							(7,200)
Interest expense							(12,041)
Earnings before taxes							$ 64,851
Identifiable assets:							
Canada	$163,237	$ 161	$ 83,218	$ 18,619	$136,076		$401,311
United States	23,813	134,789	25,844	—	—		184,446
Southeast Asia	—	—	32,979	—	—		32,979
Total identifiable assets	$187,050	$134,950	$142,041	$ 18,619	$136,076		$618,736
Depreciation, depletion and amortization expense	$ 12,706	$ 5,863	$ 11,530	$ 1,017	$ 117		$ 31,233
Capital expenditures	$ 26,900	$ 9,743	$ 25,421	$ 2,494	$ 213		$ 64,771

earnings amounted to $1,270,000. Interest income increased during the year particularly because of higher interest rates. Additional long-term debt issued by Terra and the decline in value of the Canadian dollar increased interest expense to $14,931,000 in 1978 from $12,041,000 for 1977, which had increased from $10,620,000 in 1976 as a result of higher borrowings by Terra and the consolidation of the long-term debt of Canadian Merrill.

Equity losses of associated companies were lower in 1978 but Inspiration Consolidated Copper Company continued to experience losses resulting from the low level of production in its mining operations.

Mining taxes and royalties decreased during 1978 as provincial taxes on potash operating profits ceased upon the sale of the potash division in 1977 although royalties on oil and gas increased during 1978. The investment tax credit in Terra and, as noted above, the revised accounting treatment for Indonesian operations reduced the income tax provision significantly in 1978.

Working capital declined by $45,163,000 during the year and the largest element of change within working capital was a $56,861,000 reduction in cash and short-term securities as a result particularly of new investments, which are detailed elsewhere, and capital expenditures. Working capital had been increased by $129,780,000 during 1977, primarily as a result of the sale of the potash division assets. This sale was the largest factor in the extraordinary gain of $52,577,000 recorded in 1977. Capital expenditures in 1978 increased by 29% to $83,354,000, due primarily to substantial expenditures incurred for the new mill and concentrator at Stall Lake in Manitoba, and increased petroleum exploration and development outlays.

Dividend payments were omitted during 1978, compared with $6,061,000 declared in 1977.

Supplementary consolidated financial information
(in thousands except per-share data)

	1978	1977	1976	1975	1974
Summary of operations					
Net sales	$458,665	$346,346	$343,647	$259,634	$217,210
Equity earnings (losses)	(1,783)	(2,620)	2,224	4,285	9,129
Other income	24,569	18,890	3,831	4,112	5,529
	481,451	362,616	349,702	268,031	231,868
Cost and expenses	437,838	300,385	292,670	202,556	148,118
Taxes and royalties	24,438	40,637	49,204	36,625	33,939
Other deductions	14,082	17,181	5,009	14,079	4,843
	476,358	358,203	346,883	253,260	186,900
Earnings before extraordinary items	5,093	4,413	2,819	14,771	44,968
Extraordinary items	—	52,577	(11,098)	—	—
Net earnings (loss)	$ 5,093	$ 56,990	$ (8,279)	$ 14,771	$ 44,968
Other financial data					
Capital expenditures	$ 83,354	$ 64,771	$ 46,762	$ 47,199	$ 43,639
Investment expenditures	31,969	11,306	17,254	26,022	86,940
Working capital	170,375	215,538	85,758	58,706	19,728
Total assets	669,795	618,736	476,289	517,770	402,691
Capital employed	569,065	536,624	405,676	445,782	343,635
Shareholders' investment	259,848	254,755	203,826	217,318	216,465
Dividends	—	6,061	8,018	13,918	15,907
Earnings (loss) per share	.50	5.64	(.83)	1.49	4.52
Dividends per share	—	.60	.80	1.40	1.60

Dividends and market price ranges, by quarters

	Dividends declared		Market Range: Toronto Stock Exchange (Principal market, Cdn. $)				New York Stock Exchange (U.S. $)			
			High	Low	High	Low	High	Low	High	Low
1978	A	B	—A—		—B—		—A—		—B—	
1st	—	—	17¼	15⅛	15¼	15¼	15⅜	13½	15¼	13⅜
2nd	—	—	18⅝	15¾	16¾	16⅛	16⅞	13⅞	16⅝	13⅝
3rd	—	—	21¼	17¼	20⅝	17⅝	18½	15¼	18	15⅞
4th	—	—	24	15⅛	23	15¼	20⅜	16⅛	20	16¼
1977										
1st	20¢	20¢	19⅞	18	19	18⅜	19¼	17¾	18¾	17¾
2nd	20¢	20¢	19½	15½	18⅞	15¾	18¾	14¼	18¼	16⅛
3rd	20¢	20¢	18¼	14	16⅝	15⅛	16½	15	16¼	14¾
4th	—	—	17⅞	13¾	16⅜	15	16	12½	15⅜	12½

Review of Operations

Hoistman marking cable drum at Flin Flon; inspecting ammonia tanks in Iowa; sampling in the mill at Flin Flon; changing drilling steel on gas rig in Colorado; dredging salt in Saskatchewan; loading copper ore in open pit in Arizona

Canadian Metals Division

The Canadian Metals Division is responsible for mining and metallurgy in the Flin Flon-Snow Lake area of northern Manitoba, metal sales and purchases of concentrates, the transportation of all raw materials and finished products, the operation of Whitehorse Copper Mines Ltd. in the Yukon and Tantalum Mining Corporation of Canada in southeastern Manitoba. The Division has sales, financial, administrative and transportation personnel in Toronto; operating personnel at the various sites have their own appropriate support staffs.

Flin Flon – Snow Lake operations

There were no major stoppages in 1978 and production of ore totalled 1,851,194 tons, 29,193 tons more than in 1977. Ore grades were slightly higher than in 1977 due to improved dilution control.

Production of metals from all sources was as follows (1977 figures in brackets): refined copper – 137,102,586 lb. (135,363,453); slab zinc – 142,520,552 lb. (151,820,011); cadmium – 257,690 lb. (219,373); selenium – 127,851 lb. (135,350); gold – 69,343 oz. (74,393); silver – 1,305,385 oz. (1,322,039); and lead – 1,170,989 lb. (915,188).

Mining – Flin Flon area

	ore production/average assays				
mine	tons	Au oz/ton	Ag oz/ton	Cu %	Zn %
Flin Flon	598,679	0.043	0.76	1.67	2.28
Centennial	204,694	0.033	0.64	1.42	2.30
White Lake	130,297	0.027	0.72	1.92	4.99
Westarm	119,877	0.047	0.54	3.57	1.78
Total for 1978	1,053,547	0.039	0.71	1.87	2.56
Total for 1977	908,568	0.038	0.63	1.77	2.21

In the Flin Flon Mine development and mining of low-grade ore was continued. Centennial Mine's production was maintained at rated capacity with vertical crater retreat stoping providing the bulk of the ore. White Lake Mine resumed operations in 1978 after being out of production for shaft-deepening and redevelopment. Westarm Mine was officially brought into production on January 3, 1978. Water and difficult ground conditions hampered initial operations but production improved gradually throughout the year. Construction of the new Spruce Point Mine on the south shore of Reed

New concentrator at Stall Lake Mine near Snow Lake in northern Manitoba treats ore from five mines

Lake was started in August and by year-end an access road, site-clearing, and shaft-collaring had been completed.

Mining – Snow Lake area

mine	tons	ore production/average assays Au oz/ton	Ag oz/ton	Cu %	Zn %
Stall Lake	287,724	0.035	0.24	4.65	0.28
Osborne Lake	247,492	0.022	0.21	2.53	1.65
Anderson Lake	23,375	0.033	0.23	3.18	0.10
Chisel Lake	234,482	0.036	1.03	0.75	11.26
Ghost Lake	4,574	0.028	0.80	0.36	6.39
Total for 1978	797,647	0.031	0.47	2.78	3.96
Total for 1977	913,433	0.033	0.5	2.59	3.37

Stall Lake Mine continued deepening No. 1 production shaft and diamond-drilling has confirmed continuation of No. 4 orebody to the 4,600-foot level. At Chisel Lake Mine the engineering for the drainage of the proposed open-pit site continued and two tests wells were drilled and pumped. Ghost Lake Mine did not operate during most of the year as development of the Lost Lake ore zones continued, with production scheduled for 1979. The 650-foot-level haulage connecting Ghost Lake to Chisel Lake's production shaft was completed. Anderson Lake Mine was shut down in February, 1978, to develop the orebody between the 2,650-foot and 3,000-foot levels. Shaft-deepening was completed and other development was well advanced at year-end. Diamond-drilling from the 2,750-foot level in Osborne Lake Mine confirmed a limited tonnage of ore below the bottom level.

Ore reserves

Proven reserves of copper-zinc ore in the company's mines in the Flin Flon-Snow Lake area at year-end totalled 17,016,000 tons, assaying gold – 0.037 oz. per ton; silver – 0.40 oz. per ton; copper – 2.76%; zinc – 2.7%. The new calculation included average waste dilution of 20% and average estimated recovery of 91% of diluted tonnage. Ore reserves at year-end 1977 totalled 17,511,100 tons.

Metallurgical operations

Concentrator. The tonnage of ore treated and average assays were as follows:

	1978	1977
Tons of ore treated	1,850,781	1,821,598
average tons per operating day (five days per week)	7,315	7,229
Au – oz. per ton	0.04	0.04
Ag – oz. per ton	0.6	0.6
Cu – %	2.3	2.2
Zn – %	3.2	2.8
Pb – %	0.1	0.2

The following concentrates were produced:

		assays				
concentrates	tons	Au oz/ton	Ag oz/ton	Cu %	Zn %	Pb %
Copper	212,237	0.181	2.91	18.00	3.38	0.28
Zinc	80,357	0.053	1.70	0.77	49.81	0.49
Lead	1,038	0.43	33.27	1.56	5.07	56.41

Zinc refinery. The tonnages and assays of materials treated were as follows:

		assays			
	tons	Au oz/ton	Ag oz/ton	Cu %	Zn %
HBMS concentrates	81,064	0.053	1.70	0.77	49.815
Purchased concentrates	83,764	0.002	1.489	1.206	51.775
Oxides	32,297	0.016	0.865	0.923	62.944

Production of sulphide residue for further treatment in the smelter totalled 59,640 tons; 8,780 tons of oxide residue were produced and stockpiled.

The amounts of refined zinc and cadmium produced for the Company's account were as follows:

	Zn/lb	Cd/lb
From HBMS feed	63,859,978	131,074
From purchased concentrates	77,868,260	117,898
Total	141,728,238	248,972

The inventory of zinc at year-end totalled 22,239 tons, compared with 27,528 tons at the end of 1977.

Copper smelter. Production of anode copper totalled 69,294 tons (69,273 tons in 1977). The smelter was shut down from September 17 to September 23 to rebrick the reverberatory furnace.

Tonnage and assays of materials treated were as follows:

		assays			
	tons	Au oz/ton	Ag oz/ton	Cu %	Zn %
HBMS concentrates	211,012	0.181	2.909	17.996	3.375
Residues	69,600	0.078	3.295	1.379	27.915
Purchased concentrates	112,117	0.273	4.939	30.414	2.682

Tonnage and metal content of anode copper produced for the company's account and shipment to the refinery were as follows:

	tons	Au/oz	Ag/oz	Cu/lb	Se/lb
From HBMS feed	35,238	41,468	671,103	70,157,162	127,851
From purchased concentrates	34,056	30,301	656,498	67,804,960	—
Total	69,294	71,769	1,327,601	137,962,122	127,851

Stack dust recovered from the smelter baghouse totalled 7,089 tons, assaying 31.2% zinc, 3.89% copper, 11.55% lead, and 1.52% cadmium.

Environmental control

Discussions with both provincial and federal agencies were held to obtain approvals for the operation of the Snow Lake concentrator. Joint studies of the economics and feasibility of controlling emissions to the air were undertaken in response to requests from Environment Canada and for use in upcoming discussions with the provinces.

Major projects

Construction of the 3,800-ton Snow Lake concentrator is scheduled for completion and startup in March, 1979. Two separate treatment circuits will produce zinc concentrate and copper concentrates which will be railed to the metallurgical plants at Flin Flon where unloading and blending facilities have been improved.

Accommodation for single men in Snow Lake was improved by building 56 self-contained bachelor suites and the Company continued its policy of building single-family houses at Snow Lake in an effort to attract more married personnel; 22 houses were built during 1978 which increased to 227 the number of units built since the program's inception in 1959.

Industrial relations

The new safety program introduced early in 1978 reduced the accident-frequency rate to 51.9 per million man-hours which is 15% lower than the rate in 1977. Management, however, emphasizes that this rate is unacceptable and efforts to improve safety performances are being intensified. At year-end there were 2,368 employees on the payroll, compared with 2,363 at the end of 1977. The number of employees who completed 25 years of service during the year was 45 and at year-end there were 568 employees with 25 or more years of service on the payroll.

The Collective Bargaining Agreement between the Company and 10 union locals will expire on September 30, 1979.

Tantalum Mining Corporation

Tantalum's mine produces tantalum oxide which is used mainly in the manufacture of capacitors for the electronics industry. The mining rate is 700 tons of tantalum ore per day and total production in 1978 was 172,000 tons grading 0.148% tantalum oxide. Production of tantalum oxide for the year was 340,000 lb. Approximately 60% of the production was sold under a long-term contract. The price of tantalum rose during the year from U.S. $25 per lb. to approximately $38.

Whitehorse Copper Mines

Production of ore from the joint venture totalled 863,092 tons grading 1.4% copper. Concentrate production amounted to 23,448 tons grading 44.62% copper. Proven and probable ore reserves at the end of 1978 totalled 2,631,699 tons, compared with 3,189,847 tons at the end of 1977. The joint venture is owned two-thirds by Whitehorse Copper and one-third by Anglo American Corporation of Canada Limited. A two-year agreement with the United Steelworkers of America became effective on January 1, 1979.

Hudson Bay Exploration and Development Company Limited, a wholly owned subsidiary of Hudson Bay Mining, explored for its own account in Manitoba, Saskatchewan, Yukon, and southwestern U.S., and participated with Anglo American Corporation of Canada Limited (Amcan) and Tombill Mines Limited in joint-venture exploration programs in British Columbia, Yukon, Ontario and Quebec and in the Athabasca uranium area in Saskatchewan.

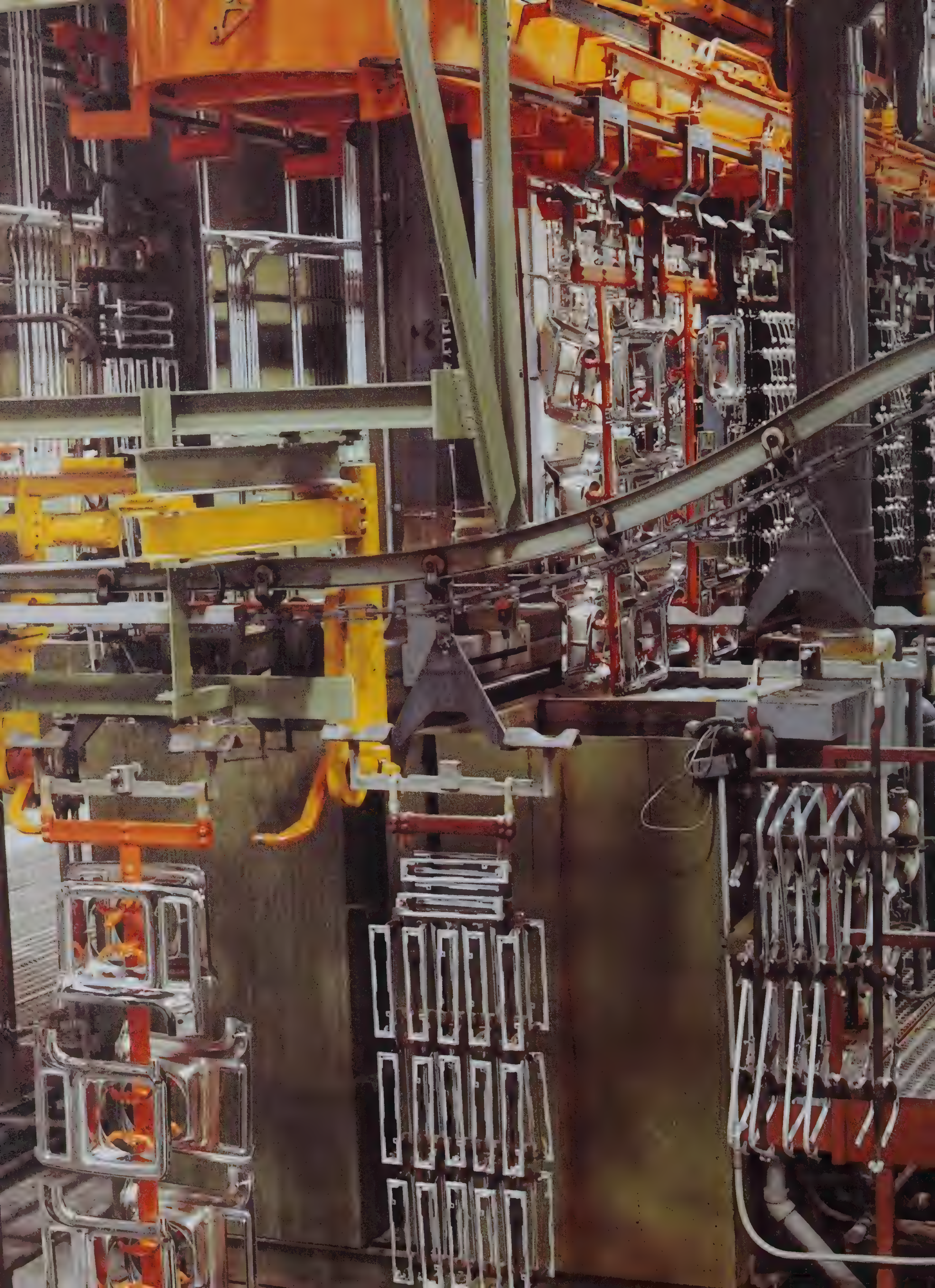
Exploration diamond-drilling totalling 59,774 feet in 172 holes was done to test 130 geophysical anomalies and to investigate further several mineralized zones. This drilling footage was distributed as follows: 61% in Manitoba and Saskatchewan; 27% in Ontario and Quebec; 6% in the Yukon; and 6% in the U.S. In the Yukon, the program included five holes drilled in the first phase of a search for an extension of the Tom lead-zinc deposit at MacMillan Pass.

The 1979 budget controlled by Hudson Bay Exploration totals $5.5 million. It includes approximately $1,146,000 to be contributed by Amcan and Tombill under a joint-venture agreement and about $468,000 from the Crown corporations engaged in joint-venture programs in Manitoba and Saskatchewan. Approximately half the total exploration budget will be spent in the Flin Flon-Snow Lake area.

Participation has been resumed in a joint-venture agreement signed in 1973 with Manitoba Mineral Resources for the exploration of a property south of Reed Lake, Manitoba. A mineralized zone was discovered there in 1977 at a point near the railroad, 16 miles southeast of Reed Lake. This mineralized zone has been traced by widely spaced drill holes over a strike length of 2,000 feet, with an average thickness of 18 feet. A portion of the south end of this zone contains ore grade copper values and further drilling is planned for 1979.

In the Athabasca uranium area in Saskatchewan, the company holds a property totalling 285,179 acres located along the southwest rim of the Athabasca basin near the Alberta boundary and holds a 45% interest in an adjoining property held by the Saskatchewan Mining Development Corporation (SMDC). Exploration work on each of these properties is being done as a joint venture with SMDC. An airborne EM-30 survey was flown over the Company's property and seven holes were drilled to test conductors located but no significant radioactivity was found. In 1979, some of the most favourable anomalous areas remaining will be further investigated by geophysics, geochemistry and diamond-drilling and by a search for evidence of radioactive boulder-trains on the property.

Exploration crews are self-reliant, especially when it comes to crossing rivers where there are no bridges



Industrial products

The Industrial Products Group of Hudson Bay Mining comprises Francana Minerals Ltd., and two wholly owned divisions, Zochem and Hudson Bay Diecastings. Francana Minerals operates a detergent-grade sodium sulphate plant at Cabri and a salt-cake plant at Alsask, both in the province of Saskatchewan. Zochem, located in Bramalea, Ontario, produces several grades of zinc oxide. Hudson Bay Diecastings, located adjacent to Zochem, has its own diecasting, buffing, polishing plating, assembling and packaging facilities.

Francana Minerals

Production of detergent-grade sodium sulphate at Cabri was lower than in the previous year because formulas revised by detergent manufacturers reduced the quantities of sodium sulphate required. Sales of salt cake were higher than in the previous year due to increased demand by the Canadian pulp and paper industry. Further plant modifications are being made to increase production, conserve energy and permit processing of raw salt mined directly from the lake. A good harvest of natural salt and a productive dredging season increased inventories of raw salt to record levels. Although profits were minimal, debt was again reduced significantly because of the improved cash flow.

Zochem Division

Although overall demand for both regular and photoconductive grades of zinc oxide remained at depressed levels throughout the year, Zochem increased its market share both in North America and overseas following a major marketing program, resulting in record profits and cash flow. The elimination of production and quality problems restored customer confidence and enabled Zochem to regain its position in the marketplace. Operating economies were realized through furnace modifications which conserve energy and allow more efficient use of manpower. A two-year labor contract was negotiated in June with the Canadian Chemical Workers.

Hudson Bay Diecastings Division

Sales were comparable with those for 1977 but tonnage of zinc processed was considerably lower, 2,901 tons compared with 3,489 tons. The decrease was due to a change in the product mix and less zinc per part cast. Consequently, profits were lower than in 1977, reflecting the lower volume, increased costs and a competitive market. During the last half of the year, the new electroplating facility was brought onstream – on budget and on schedule. By year-end there was an improvement in throughput, including considerably more production of chrome-plated parts on order for 1979. A two-year labor contract was signed in August with the United Auto Workers.

New $2.6-million automatic electroplating line

Petroleum

Canadian Merrill Ltd. and Francana Oil & Gas Ltd., the two public companies in the Company's petroleum sector, are engaged in exploration for and development of crude oil and natural gas in various areas of North America. Francana's major subsidiary is Trend International Limited which is a partner in and the operator of a production-sharing contract in Indonesia.

Canadian Merrill

Gross oil and gas revenues totalled $21,323,000, compared with $18,851,000 in 1977. Cash flow before income taxes increased to $7,963,000 from $6,999,000 and net earnings were $2,259,000 (82¢ per share), compared with $3,599,000 ($1.69 per share before dilution; $1.33 per share on a fully diluted basis). Curtailments in the volumes of gas taken by the company's major customer during 1978 resulted in lower production, revenue and profits; in addition, a substantial downward revision at year-end 1978 of estimated reserves from the figures reported a year ago resulted in a higher depletion and amortization charge which further reduced profits accordingly.

Production

Production in 1978 totalled 11.6 billion cubic feet of natural gas and 240,000 barrels of crude oil and natural gas liquids.

Exploration and development

Merrill's capital expenditures in the year totalled $12,476,000. Expenditures for geological and geophysical programs, land acquisition and retention, and exploratory drilling in Canada were $6,441,000. Development drilling and related expenditures in Canada were $3,335,000. In the U.S., Merrill's subsidiary company, Provident Resources, Inc., invested U.S. $2,231,000 for exploratory and development drilling. Merrill's drilling program resulted in 27 gross gas wells, 8 gross oil wells and 13 gross dry holes.

Reserves

The following review of reserve evaluations was prepared by Merrill's technical staff.

	December 31 1978	1977
Natural gas	Billions of cubic feet	
Proved developed and undeveloped	202.5	385.3
Probable additional	56.5	37.8
Total	259.0	423.1
Crude oil and natural gas liquids	Barrels	
Proved developed	1,989,000	2,450,000

The downward revision in estimated reserves will not affect Merrill's ability to maintain 1978 production rates in 1979.

The indicated reduction in estimated reserves from the figures reported for 1977 is the result of detailed reservoir studies carried out during 1978 by Merrill's engineering and geological staffs. These studies of Merrill's Canadian and U.S. properties incorporated cumulative well-performance characteristics, reservoir-pressure data obtained during extended shut-in periods for most of the Canadian gas properties due to market curtailments, and included information obtained from 1978 drilling results by the company and other operators in Merrill's producing areas. The earlier reserves estimates were, for the most part, based on volumetric techniques and limited reservoir-pressure or well-performance data. The current data has resulted in a much more definitive description of the company's producing reservoirs and reserves.

Francana, including Trend International

Consolidated gross revenue, before royalties, was $59,714,000, down from $69,039,000 for 1977. Funds generated from operations, after income taxes, totalled $26,975,000, compared with $26,787,000 for 1977. Net earnings were $9,745,000 ($1.25 per share), down from $9,907,000 ($1.27 per share) for 1977. As a result of changes in the production-sharing contract in Indonesia, gross production income for 1978 and 1977 is not directly comparable; however, funds from operations after income taxes and net earnings for 1978 and 1977 are directly comparable.

Francana's North American operations, excluding Trend, contributed $13,457,000, or 23%, to total revenues and $2,114,000, or 22%, to earnings from operations. Trend's contribution to consolidated revenue of $43,388,000 was derived 85% from Indonesian operations and 15% from North American operations.

Production and sales

Total production of crude oil from Trend's Indonesian project declined slightly during the year, as a result of natural reservoir decline, to 25,948,000 barrels.

Sales from Trend's North American operations were 465,000 barrels of crude oil and 803 million cubic feet of natural gas before royalty deductions.

Sales from Francana's North American operations totalled 767,000 barrels of crude oil and 3.2 billion cubic feet of natural gas. Operating profit (revenue less royalties and operating expenses) after tax was $6,646,000, up by 17% from the $5,683,000 realized for 1977.

Exploration and development

Consolidated capital expenditures totalled $15,274,000. Expenditures for land acquisition and retention, geological and geophysical work, drilling and production equipment were $3,043,000 for Trend in Indonesia and in other non-North American areas of activity, $3,497,000 for Trend in the U.S. and $7,775,000 for Francana in Canada. Exploration and development drilling programs completed in 1978 by Francana and Trend included participation in 117 gross wells.

Reserves

Francana's proved and probable reserves in Canada, excluding Trend, were estimated to be 16,587,000 barrels of crude oil and natural gas liquids and 99,665 million cubic feet of natural gas at year-end. Trend's North American proved and probable reserves were estimated to be 4,287,000 barrels of crude oil and 15,559 million cubic feet of natural gas.

Geophysical crew drilling seismic shot holes in Alberta

Fertilizers, agricultural products

Terra Chemicals International, Inc.

Terra is an agricultural marketing and manufacturing organization based in Sioux City, Iowa. Its manufacturing complex at Port Neal, Iowa, produces nitrogen-based fertilizers and nitrogen feed ingredients; manufacturing facilities owned in partnership at Woodward, Oklahoma, produce ammonia, nitrogen fertilizer solutions and urea liquor. Terra also purchases other chemical fertilizers, which usually are blended with the company's nitrogen products. Terra markets its products at both the retail and wholesale levels. Retail sales of fertilizer, crop-protection chemicals, seed and other farm products are made directly to the farmer through a network of more than 100 farm service centres in the Midwest, the South and Southwest.

Financial results

Net earnings totalled $1,277,000 (1¢ per common share), down from $7,971,000 ($1.27 per share) for 1977. Revenues were $198,901,000, up by 81.6% from $109,539,000 in 1977. Although revenues set a record, these were due primarily to the addition of sales from the Riverside outlets in the South and Southwest. The financial results were adversely affected by lower prices, higher operating costs, particularly for natural gas, and increased interest costs. Lower prices were largely attributable to the current worldwide oversupply of ammonia and derivative nitrogen products, accompanied by increased imports into the U.S. which, in some cases, depressed prices below production costs. Interest expense was higher than in 1977 due to the addition of $15 million of long-term debt resulting from the Riverside acquisition and the Port Neal expansion and greater short-term borrowing for increased seasonal working capital requirements.

Expansions

The integration of the Riverside Chemical Company's facilities, management and personnel into Terra's operations under a new marketing division proceeded as planned. Increased revenues, largely from Riverside, reflecting largely the resale of products through its retail organization, were modestly profitable. A major portion of Riverside's sales consists of agricultural chemicals, which have lower profit margins than fertilizer products. The first phase of the $6-million expansion of urea-producing

Terra's Big "A" machines applying liquid fertilizer on a custom basis; one can cover several hundred acres in one day

facilities at Port Neal came on stream during the second quarter and the first shipment of granulated urea was made during the third quarter. The product has been favorably received in the marketplace because of the superior way it blends with other bulk fertilizers. The new upgrading facility owned by Bison Nitrogen, a partnership in which Terra has a 65% interest and is the managing partner, completed its startup phase in the second quarter and is operating at design capacity. The Bison plant, located adjacent to the 1,200-ton-per-day ammonia plant owned by Oklahoma Nitrogen, a partnership in which Terra has a 25% interest, manufactures urea/ammonia nitrate solution fertilizer and liquid feed urea.

Supply, demand and competition

The fertilizer business in the U.S. has become more cyclical in the past decade, probably due to the increase in the minimum size of new production units, which leads to stepped increases in production capacity that temporarily exceed demand. Since 1974, wholesale list prices for ammonia have dropped by 32% while production costs have more than doubled, principally due to the increased cost of natural gas. World capacity for nitrogen production has increased faster than world consumption. However, at least 24 domestic ammonia plants, which represent about 20% of the 1978 domestic capacity, were taken out of production early in 1979 and domestic inventories of ammonia are being further reduced through temporary shutdowns of plants and restrictions on production. In addition, a brisk demand for anhydrous ammonia by farmers in the fall reduced dealers' inventories further. Consequently, it is expected that worldwide supply and demand will come into balance in the relatively near future.

Although the poor price for ammonia has affected Terra, it has an advantageous competitive position for several reasons: the Port Neal ammonia plant is a relatively low-cost producer in the heart of the nitrogen market – the Corn Belt; it is insulated from the effects of imported ammonia because of its continental location; and with reasonable costs for natural gas, it should remain a highly competitive source of nitrogen products. Furthermore, most of Terra's ammonia capacity is upgraded into higher-margin urea and nitrogen solution products, both of which are difficult to manufacture from imported ammonia. And finally, Terra's retail network provides a direct farm market for the company's produced nitrogen products as well as for purchased products. Two-thirds of the total sales dollar is developed through purchased products, which are purchased at favorable prices and terms.

Although Terra has suffered a temporary setback because of the excess industry production capacity relative to demand, the company possesses basic strengths of well-based fixed assets, an excellent marketing organization and experienced personnel, and consequently expects to remain fully competitive in its industry.

Inspiration Consolidated Copper Company

Inspiration Consolidated Copper produces and sells copper from its Arizona operations, which includes mines, smelter, refinery, rod-fabricating and sulphuric acid plants. Inspiration also smelts copper-bearing materials for other producers.

The company lost \$7,821,000 on deliveries of 89,354,000 lb. of copper at an average price of 64.92¢ per lb., compared with a loss of \$11,142,000 on deliveries of 90,873,000 lb. at an average price of 66.84¢ per lb. during 1977. Low metal prices throughout the year and increased costs for labor and materials contributed to the loss.

Mining

The Christmas Mine remained dormant throughout the year but at year-end it was decided to investigate the feasibility of reopening the open-pit operation. Once this study has been completed, the feasibility of producing ore from underground at this property will be carefully examined. A 6,000-ton-per-day mill is adjacent to a 22-ft.-diameter vertical shaft, and some development work has been done on certain orebodies. Both studies should be completed during 1979 and it is hoped that a decision can be made before year-end.

Although no mining was carried out at the Ox-Hide Mine, 4,147,000 lb. of copper were produced by leaching existing low-grade dumps. During April, the mining and milling operations at Inspiration returned to a full seven-day schedule. A new 17-cu.-yd. shovel and an overpass system that shortened the waste-haul distance increased the rate of waste removal and lowered the unit cost.

Metallurgical operations

Heavy rains during November and December adversely affected production of direct mill feed ore and dual ore (treated by vat leaching before flotation recovery of sulphide copper) from the Thornton and Joe Bush orebodies. Total rainfall during 1978 measured a record 38 inches, eight inches more than the previous record.

The smelter and acid plant operated at 93% of annual capacity. Operations were shut down for four weeks at midyear so that scheduled major repairs and modifications could be carried out.

The molybdenum recovery section in the concentrator was reactivitated during the second half of the year and resulted in 103,000 lb. of MoS_2 concentrate from the treatment of about 40% of the copper concentrates produced. Further modifications will be carried out to enable treatment of all copper concentrates.

A portion of Inspiration Copper's metallurgical complex in Arizona

The refinery operated satisfactorily and rod production continued to improve as a result of modifications made throughout the year.

With the rod plant operating well, production rates were increased steadily throughout the year, resulting in a reduction in the unit cost of rod produced. Rod sales of 81,381,000 lb. were realized by operating the plant five days per week on a two-shift basis.

Construction of a $14-million solvent extraction plant is underway and it will be commissioned late in 1979. Although the new facility will not increase production of copper, it will provide significant cost savings compared with the current process of copper recovery from dump leach solutions by cementation, smelting and refining.

Additional drilling was carried out with a view to increasing the ore reserves, The results of this drilling were encouraging and are being used to develop a long-range mining plan which ultimately will indicate what changes and improvements will have to be made in the metallurgical plants in order to treat the ore by the most economical method.

Exploration

Wholly owned Inspiration Development Company undertakes exploration in the U.S. and conducted operations in all the western states except Hawaii. Three gold prospects in California and one in Arizona were drilled and subsequently abandoned. Drilling totalled 6,654 feet in 48 holes. A total of 7,971 feet was drilled on uranium prospects in Colorado and exploration is continuing. Other uranium prospects were examined and one was selected for further exploration. Claims for molybdenum and copper were staked in Montana and Nevada following geochemical and geophysical surveys. Further work is planned on these properties in 1979. Further investigatory work was undertaken on the Ferron Canyon project, a potential underground coal mine in Utah.

Environmental control

Although more than $60 million has been spent since 1971 for pollution-control facilities at the smelter, studies of the smelter continued during the year to resolve environmental problems that still exist and, at the same time, to optimize output from the smelter facilities. As yet, there are no definite indications of the smelter-emission standards that will have to be met. Recommendations must be submitted by the State of Arizona to the federal authorities before definitive regulations can be determined. In the meantime, planning is underway on the basis of the best technology available.

Administration

In December it was decided to move the Head Office from Morristown, New Jersey, to Phoenix, Arizona. Operations in Arizona can be better controlled from Phoenix and contact with state legislators and regulatory officials will be improved. A sales office has been established in New York City since most of the sales are made in that area.

Directors and Officers

Directors

*H.R. Fraser, Toronto
Chairman
Hudson Bay Mining

†J.L. Carpenter, Toronto
Executive Vice-President
Hudson Bay Mining

*H.P. Crawford, Q.C., Toronto
A Senior Partner
Osler, Hoskin & Harcourt
Barristers and solicitors

*E.P. Gush, Toronto
President
Hudson Bay Mining

M.B. Hofmeyr, London
Chairman and Managing Director
Charter Consolidated Limited
A mining-finance house

†R.H. Jones, Winnipeg
President and Chief Executive Officer
The Investors Group
A financial holding company

*†A.T. Lambert, Toronto
Former Chairman
The Toronto-Dominion Bank
A Canadian chartered bank

H.C.F. Mockridge, Q.C., Toronto
A Senior Partner
Osler, Hoskin & Harcourt

*W.A. Morrice, Toronto
Former President (retired)
Hudson Bay Mining

G.W.H. Relly, Johannesburg
Joint Deputy Chairman
Anglo American Corporation of South Africa Limited
A mining-finance house

A. Sweatman, Q.C., Winnipeg
Partner
Thompson, Dorfman, Sweatman
Barristers and solicitors

J.D. Taylor, Q.C., Johannesburg
Manager
Anglo American Corporation of South Africa Limited

*Member of the Executive Committee
†Member of the Audit Committee

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Chairman

E.P. Gush
President

J.L. Carpenter
Executive Vice-President

A.M. Doull
Senior Vice-President – Finance

Dr. J.B. Howkins
Senior Vice-President – Exploration

H. ReKunyk
Senior Vice-President – Petroleum

J.R. Sadler
Senior Vice-President
Canadian Metals Division

H.S. Schwartz
Senior Vice-President – Metallurgy

C.K. Taylor, Q.C.
Senior Vice-President – Administration
Secretary and General Counsel

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Senior Vice-President – Operations and Technical Development

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Vice-President – Exploration

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Vice-President – Finance
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S.R. Horne
Vice-President – Investments

G.A.C. MacRae
Vice-President – Finance and Administration
Canadian Metals Division

Dr. C.L. Sarthou
Vice-President – Market Research and Development

Miss S. Kozel
Assistant Secretary

P.H. Page
Comptroller

Major holdings (*Ownership is 100% unless indicated otherwise*)

Metals

Canadian Metals Division
  Flin Flon-Snow Lake Operations
  Tantalum Mining Corporation of Canada Limited (37.5%)
  Whitehorse Copper Mines Ltd.
Hudson Bay Exploration and Development Company Limited
Inspiration Consolidated Copper Company (50%)
Lytton Minerals Limited (33.9%)
  Compania Cuprifera La Verde, S.A. (Lytton holds 47.5%)
Stikine Copper Limited (34.9%)

Petroleum

Canadian Merrill Ltd. (61.9%)
Francana Oil & Gas Ltd. (54.9%)
Trend International Limited
  (Francana Oil & Gas holds 56.8%)

Fertilizers and agricultural products

Terra Chemicals International, Inc. (50.5%)

Industrial products

Francana Minerals Ltd. (60%)
Hudson Bay Diecastings Division
Zochem Division

Corporate information

Hudson Bay Mining and Smelting Co., Limited

Head Office

P.O. Box 28, Toronto-Dominion Centre,
Toronto, Ontario M5K 1B8
Cable address: Hudbay, Toronto
Telephone: (416) 362-2192
Telex: 02-29408

Transfer agents

The Royal Trust Company –
Montreal, Toronto, Winnipeg, Regina, Calgary, Vancouver.
Morgan Guaranty Trust Company of New York – New York, N.Y.

Registrars

Montreal Trust Company –
Montreal, Regina.
Crown Trust Company –
Toronto, Winnipeg, Calgary, Vancouver.
The Chase Manhattan Bank – New York, N.Y.

Principal addresses

Metals

Hudson Bay Mining and Smelting Co., Limited
Canadian Metals Division
P.O. Box 1500, Flin Flon, Manitoba R8A 1N9

Inspiration Consolidated Copper Company
100 West Washington Street, First National Bank Plaza,
Suite 1870, Phoenix, Arizona 85003

Tantalum Mining Corporation of Canada Limited
Bernic Lake, Manitoba R0E 0G0

Whitehorse Copper Mines Ltd.
P.O. Box 4280, Whitehorse, Yukon Y1A 3T3

Petroleum

Canadian Merrill Ltd.
Suite 2900, Scotia Centre, 700 - 2nd Street, S.W.,
Calgary, Alberta T2P 2W2

Francana Oil & Gas Ltd.
29th floor, Scotia Centre, 700 - 2nd Street, S.W.,
Calgary, Alberta T2P 2W2

Fertilizers and agricultural products

Terra Chemicals International, Inc.
P.O. Box 1828, Sioux City, Iowa 51102

Industrial products

Francana Minerals Ltd.
670 Bank of Canada Building, Regina, Saskatchewan
S4P 0M8

Hudson Bay Diecastings Division
230 Orenda Road, P.O. Box 1050,
Brampton, Ontario L6T 1E9

Zochem Division
1 Tilbury Court, P.O. Box 1120, Brampton, Ontario
L6V 2L8

Exploration

Hudson Bay Exploration and Development Company Limited:

20 Victoria Street, 8th floor, Toronto, Ontario M5C 2N8

P.O. Box 1500, Flin Flon, Manitoba R8A 1N9

Bentall Centre, Tower No. 2, 1695 - 555 Burrard Street,
Vancouver, British Columbia V7X 1G6